109TH CONGRESS 2D SESSION

S. 2802

To improve American innovation and competitiveness in the global economy.

IN THE SENATE OF THE UNITED STATES

May 15, 2006

Mr. Ensign (for himself, Mr. Stevens, and Mrs. Hutchison) introduced the following bill; which was read twice and referred to the Committee on Commerce, Science, and Transportation

A BILL

To improve American innovation and competitiveness in the global economy.

- 1 Be it enacted by the Senate and House of Representa-
- 2 tives of the United States of America in Congress assembled,
- 3 SECTION 1. SHORT TITLE; TABLE OF CONTENTS.
- 4 (a) Short Title.—This Act may be cited as the
- 5 "American Innovation and Competitiveness Act of 2006".
- 6 (b) Table of Contents for
- 7 this Act is as follows:

Sec. 1. Short title; table of contents.

TITLE I—OFFICE OF SCIENCE AND TECHNOLOGY POLICY; GOVERNMENT-WIDE SCIENCE

Sec. 101. National science and technology summit.

Sec. 102. Study on barriers to innovation.

Sec. 103. National innovation medal.

TITLE II—INNOVATION PROMOTION

- Sec. 201. President's Council on Innovation and Competitiveness.
- Sec. 202. Innovation acceleration grants.
- Sec. 203. Regional economic development.

TITLE III—NATIONAL SCIENCE FOUNDATION

- Sec. 301. Authorization of appropriations.
- Sec. 302. Innovation-based experiential learning.
- Sec. 303. Graduate fellowships and graduate traineeships.
- Sec. 304. Professional science masters degree programs.
- Sec. 305. Increased support for science education through the National Science Foundation.
- Sec. 306. Study of service science.
- Sec. 307. Meeting critical national science needs.
- Sec. 308. Experimental program to stimulate competitive research.

TITLE IV—NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

- Sec. 401. NASA's contribution to innovation.
- Sec. 402. Aeronautics Institute for Research.
- Sec. 403. Basic research enhancement.

TITLE V—NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY

- Sec. 501. Authorization of appropriations.
- Sec. 502. Amendments to the Stevenson-Wydler Technology Innovation Act of 1980
- Sec. 503. Innovation acceleration.
- Sec. 504. Development of advanced manufacturing systems.
- Sec. 505. Collaborative manufacturing research pilot grants.
- Sec. 506. Manufacturing extension.
- Sec. 507. Experimental program to stimulate competitive technology.
- Sec. 508. Technical amendments to the National Institute of Standards and Technology Act and other technical amendments.

1 TITLE I—OFFICE OF SCIENCE

2 AND TECHNOLOGY POLICY;

3 GOVERNMENT-WIDE SCIENCE

- 4 SEC. 101. NATIONAL SCIENCE AND TECHNOLOGY SUMMIT.
- 5 (a) IN GENERAL.—Within 180 days after the date
- 6 of enactment of this act, the President shall convene a
- 7 National Science and Technology Summit. The Summit
- 8 shall include representatives of industry, small business,

- 1 academia, State government, and Federal research and
- 2 development agencies. The summit shall examine the
- 3 health and direction of the United States' science and
- 4 technology enterprise.
- 5 (b) Report.—Within 90 days after the end of the
- 6 Summit, the President shall issue a report on the results
- 7 of the Summit. The report shall identify key research and
- 8 technology challenges and recommendations for areas of
- 9 investment for Federal research and technology programs
- 10 over the next 5 years beginning after the report is issued.
- 11 (c) Annual Evaluation.—Beginning with the first
- 12 year ending after the date of enactment of this Act, the
- 13 Director of the Office of Science and Technology Policy
- 14 shall publish an annual report containing recommenda-
- 15 tions for areas of investment for Federal research and
- 16 technology programs, together with a justification for each
- 17 area identified in the report. For the first 5 years after
- 18 the Summit, the report shall take into account rec-
- 19 ommendations of the Summit.

20 SEC. 102. STUDY ON BARRIERS TO INNOVATION.

- 21 (a) In General.—The National Academy of
- 22 Sciences shall conduct and complete a study to identify,
- 23 and to review methods to mitigate, new forms of risk for
- 24 businesses beyond conventional operational and financial

- 1 risk that affect the ability to innovate, including studying2 and reviewing—
- (1) incentive and compensation structures that
 could effectively encourage long-term value creation
 and innovation;
 - (2) methods of voluntary and supplemental disclosure by industry of intellectual capital, innovation performance, and indicators of future valuation;
 - (3) means by which government could work with industry to enhance the legal and regulatory framework to encourage the disclosures described in paragraph (2);
 - (4) practices that may be significant deterrents to United States businesses engaging in innovation risk-taking compared to foreign competitors, including tort litigation, the nature and extent of any resulting defensive management practices, and recommendations on practices to restore innovation risk-taking and to overcome defensive practices;
 - (5) means by which industry, trade associations, and universities could collaborate to support research on management practices and methodologies for assessing the value and risks of longer term innovation strategies; and

1	(6) means to encourage new, open, and collabo-
2	rative dialogue between industry associations, regu-
3	latory authorities, management, shareholders, and
4	other concerned interests to encourage appropriate
5	approaches to innovation risk-taking.
6	(b) Report Required.—The National Academy of
7	Sciences shall, not later than 1 year after the date of en-
8	actment of this Act and every 4 years thereafter, submit
9	to Congress a report on the study conducted under sub-
10	section (a).
11	(c) Authorization of Appropriations.—There
12	are authorized to be appropriated to the National Acad-
13	emy of Sciences \$1,000,000 for fiscal year 2007 for the
14	purpose of carrying out the study required under this sec-
15	tion.
16	SEC. 103. NATIONAL INNOVATION MEDAL.
17	Section 16 of the Stevenson-Wydler Technology Inno-
18	vation Act of 1980 (15 U.S.C. 3711) is amended—
19	(1) by striking the section heading and insert-
20	ing "SEC. 16. NATIONAL TECHNOLOGY
21	MEDAL; NATIONAL INNOVATION
22	MEDAL.";
23	(2) by striking "is" in subsection (a) and in-
24	serting "are";

1	(3) by striking "Medal," in subsection (a) and
2	inserting "Medal and a National Innovation Medal";
3	(4) by striking "medal," in subsection (b) and
4	inserting "medals,";
5	(5) by striking "States." in subsection (b) and
6	inserting "States or by reason of their unique sci-
7	entific and engineering innovations in the National
8	interest at the time such innovation occurs."; and
9	(6) by striking "presentation of the award" in
10	subsection (c) and inserting "presentations of the
11	awards''.
12	TITLE II—INNOVATION
13	PROMOTION
14	SEC. 201. PRESIDENT'S COUNCIL ON INNOVATION AND
15	COMPETITIVENESS.
16	
	(a) In General.—The President shall establish a
17	(a) In General.—The President shall establish a President's Council on Innovation and Competitiveness.
17 18	
	President's Council on Innovation and Competitiveness.
18	President's Council on Innovation and Competitiveness. (b) Duties.—The Council's duties shall include—
18 19	President's Council on Innovation and Competitiveness. (b) Duties.—The Council's duties shall include— (1) monitoring implementation of public laws
18 19 20	President's Council on Innovation and Competitiveness. (b) Duties.—The Council's duties shall include— (1) monitoring implementation of public laws and initiatives for promoting innovation, including
18 19 20 21	President's Council on Innovation and Competitiveness. (b) Duties.—The Council's duties shall include— (1) monitoring implementation of public laws and initiatives for promoting innovation, including policies related to research funding, taxation, immi-
18 19 20 21 22	President's Council on Innovation and Competitiveness. (b) Duties.—The Council's duties shall include— (1) monitoring implementation of public laws and initiatives for promoting innovation, including policies related to research funding, taxation, immigration, trade, and education that are proposed in

1	ess for using metrics to assess the impact of existing
2	and proposed policies and rules that affect innova-
3	tion capabilities in the United States;
4	(3) identifying opportunities and making rec-
5	ommendations for the heads of executive agencies to
6	improve innovation, monitoring, and reporting on
7	the implementation of such recommendations;
8	(4) developing metrics for measuring the
9	progress of the Federal Government with respect to
10	improving conditions for innovation, including
11	through talent development, investment, and infra-
12	structure improvements; and
13	(5) submitting an annual report to the Presi-
14	dent and Congress on such progress.
15	(e) Membership and Coordination.—
16	(1) Membership.—The Council shall be com-
17	posed of the Secretary or head of each of the fol-
18	lowing:
19	(A) The Department of Commerce.
20	(B) The Department of Defense.
21	(C) The Department of Education.
22	(D) The Department of Energy.
23	(E) The Department of Health and
24	Human Services.

1	(F) The Department of Homeland Secu-
2	rity.
3	(G) The Department of Labor.
4	(H) The Department of the Treasury.
5	(I) The National Aeronautics and Space
6	Administration.
7	(J) The Securities and Exchange Commis-
8	sion.
9	(K) The National Science Foundation.
10	(L) The Office of the United States Trade
11	Representative.
12	(M) The Office of Management and Budg-
13	et.
14	(N) The Office of Science and Technology
15	Policy.
16	(O) Any other department or agency des-
17	ignated by the President.
18	(2) Chairperson.—The Secretary of Com-
19	merce shall serve as chairperson of the Council.
20	(3) COORDINATION.—The chairperson of the
21	Council shall ensure appropriate coordination be-
22	tween the Council and the National Economic Coun-
23	cil, the National Security Council, and the National
24	Science and Technology Council.
25	(d) Development of Innovation Agenda.—

	· · · · · · · · · · · · · · · · · · ·
1	(1) In general.—The Council shall develop a
2	comprehensive agenda for strengthening the innova-
3	tion and competitiveness capabilities of the Federal
4	Government and State governments, academia, and
5	the private sector in the United States.
6	(2) Consultation.—The comprehensive agen-
7	da required by paragraph (1) shall be developed in
8	consultation with appropriate representatives of the
9	private sector, scientific organizations, and academic
10	organizations.
11	(e) Technical Amendment.—Section 101(b) of the
12	High-Performance Computing Act of 1991 (15 U.S.C.
13	5511(b)) is amended by striking "an" in the first sentence
14	and inserting "a distinct".
15	SEC. 202. INNOVATION ACCELERATION GRANTS.
16	(a) Grant Program.—The President, through the
17	head of each Federal research agency, shall establish a
18	grant program, to be known as the "Innovation Accelera-
19	tion Grants Program", to support and promote innovation
20	in the United States. Priority in the awarding of grants

22 (1) meet fundamental technology challenges;

shall be given to projects that—

(2) involve multidisciplinary work and a high
degree of novelty;

1 (3) have the potential for yielding results with 2 far-ranging or wide-ranging implications but are 3 considered too novel or span too diverse a range of 4 disciplines to fare well in the traditional peer review 5 process.

6 (b) Awarding of Grants Through Departments
7 And Agencies.—

(1) Funding goals.—The President shall ensure that it is the goal of each Executive agency (as defined in section 105 of title 5, United States Code) that finances research in science, mathematics, engineering, and technology to allocate approximately 8 percent of the agency's total annual research and development budget to funding grants under the Innovation Acceleration Grants Program.

(2) Administration.—

(A) In GENERAL.—Each head of an Executive agency awarding grants under paragraph (1) shall submit a plan for implementing the grant program within such Executive agency to the Director of the Office of Science and Technology Policy and the Director of the Office of Management and Budget. The implementation plan shall be submitted not later than 90 days after the date of enactment of this Act. The im-

plementation plan may incorporate existing initiatives of the Executive agencies that promote research in innovation as described in subsection (a).

(B) REQUIRED METRICS.—The head of each Executive agency submitting an implementation plan pursuant to this section shall include metrics upon which grant funding decisions will be made and metrics for assessing the success of the grants awarded.

(C) Grant duration and renewals.—

- (i) IN GENERAL.—Any grants issued by an Executive agency under this section shall be for a period not to exceed 3 years.
- (ii) EVALUATION.—Not later than 90 days prior to the expiration of a grant issued under this section, the Executive agency that approved the grant shall complete an evaluation of the effectiveness of the grant based on the metrics established pursuant to subparagraph (B). In its evaluation, the Executive agency shall consider the extent to which the program funded by the grant met the goals of quality improvement and job creation.

1	(iii) Publication of Review.—The
2	Executive agency shall publish and make
3	available to the public the review of each
4	grant approved pursuant to this section.
5	(iv) Failure to meet metrics.—
6	Any grant that the Executive agency
7	awarding the grant determines has failed

awarding the grant determines has failed to satisfy any of the metrics developed pursuant to subparagraph (B), shall not be el-

igible for a renewal.

(v) Renewal.—A grant issued under this section that satisfies all of the metrics developed pursuant to subparagraph (B), may be renewed once for a period not to exceed 3 years. Additional renewals may be considered only if the head of the Executive agency makes a specific finding that the program being funded involves a significant technology advance that requires a longer timeframe to complete critical research, and the research satisfies all the metrics developed pursuant to subparagraph (B).

(c) Definitions.—

- 1 (1) FEDERAL RESEARCH AGENCY DEFINED.—
 2 In this section, the term "Federal research agency"
 3 means a major organizational component of a de4 partment or agency of the Federal Government, or
 5 other establishment of the Federal Government op6 erating with appropriated funds, that has as its pri7 mary purpose the performance of scientific research.
- 8 (2) Major organizational component.— 9 The term "major organizational component", with 10 respect to a department, agency, or other establish-11 ment of the Federal Government, means a compo-12 nent of the department, agency, or other establish-13 ment that is administered by an individual whose 14 rate of basic pay is not less than the rate of basic 15 pay payable under level V of the Executive Schedule 16 under section 5316 of title 5, United States Code.

17 SEC. 203. REGIONAL ECONOMIC DEVELOPMENT.

- 18 (a) Development of Funding Strategy.—
- 19 (1) IN GENERAL.—The Assistant Secretary for
 20 Economic Development of the Department of Com21 merce shall review Federal programs that support
 22 local economic development and prepare and imple23 ment a strategy to focus greater funding on initia24 tives that improve the ability of communities to par25 ticipate successfully in the modern economy through

- 1 innovation. In preparing the strategy, priority should 2 be given to projects that— 3 (A) emphasize private sector cooperation 4 with State and local governments and nonprofit organizations focused on regional economic de-6 velopment as the means of achieving specific 7 objectives related to the support and promotion 8 of innovation; and 9 (B) are the most successful in meeting the 10 metrics established under subsection (b). 11 (2) Coordination.—The Assistant Secretary 12 shall coordinate the development and implementation 13 of the strategy with the activities carried out by the 14 Secretary of Commerce under subsection (d). 15
- 15 (b) EVALUATION OF PROGRAMS.—The Assistant Sec-16 retary for Economic Development of the Department of 17 Commerce shall develop metrics to measure the success 18 of Federal programs in supporting and promoting innova-19 tion at the local community level while minimizing bu-20 reaucracy and overhead expenses.
- 21 (c) Promotion of Economic Development Op-22 Portunities.—The Assistant Secretary for Economic 23 Development of the Department of Commerce should work 24 with organizations focused on economic development to 25 highlight opportunities for such organizations to serve

1	local communities through grants focused on economic de-
2	velopment and investment in companies pursuing innova-
3	tion.
4	(d) REGIONAL INNOVATION HOT SPOTS.—
5	(1) Promotion of regional innovation hot
6	SPOTS.—The Secretary of Commerce shall coordi-
7	nate activities focused on promoting innovation
8	through the development of regional innovation hot
9	spots.
10	(2) Guide to developing successful re-
11	GIONAL INNOVATION HOT SPOTS.—
12	(A) In general.—Not later than 1 year
13	after the date of enactment of this Act, the Sec-
14	retary of Commerce, in consultation with rep-
15	resentatives of regional innovation hot spots,
16	shall publish a report, to be titled the "Guide
17	to Developing Successful Regional Innovation
18	Hot Spots", that examines successful regional
19	innovation hot spots and includes recommenda-
20	tions for establishing and fostering regional in-
21	novation hot spots.
22	(B) CONTENT.—The report required under
23	subparagraph (A) shall—
24	(i) include information on the evalua-
25	tion of human capital;

1	(ii) include information on the role of
2	sponsoring institutions, such as univer-
3	sities, nonprofit organizations, and labora-
4	tories, in establishing and fostering re-
5	gional innovation hot spots;
6	(iii) include information on the role of
7	State and local government leaders, leaders
8	in the research and business communities,
9	and community organizations in estab-
10	lishing and fostering regional innovation
11	hot spots;
12	(iv) discuss the importance of collabo-
13	ration by public and private sector leaders;
14	(v) identify sources of funding for
15	these activities within Federal, State, and
16	local governments and the private sector;
17	and
18	(vi) include recommendations for de-
19	veloping strategic plans to stimulate inno-
20	vation, including recommendations relating
21	to knowledge transfer and commercializa-
22	tion, the support of regional entrepreneur-
23	ship and increased innovation within exist-

ing regional firms, and the linking of pri-

1	mary institutions engaged in the innova-
2	tion process.
3	(3) REGIONAL INNOVATION HOT SPOT
4	METRICS.—
5	(A) DEVELOPMENT OF METRICS.—In con-
6	junction with publishing the report required
7	under paragraph (2), the Secretary of Com-
8	merce shall develop the following sets of
9	metrics:
10	(i) Metrics to be considered for identi-
11	fying potential regional innovation hot
12	spots (in this subsection referred to as
13	"identifying metrics").
14	(ii) Metrics to be considered for evalu-
15	ating the impact and effectiveness of estab-
16	lished regional innovation hot spots (in this
17	subsection referred to as "evaluation
18	metrics").
19	(B) Use of metrics.—The Secretary of
20	Commerce shall use the identifying metrics to
21	conduct biannual assessments of potential re-
22	gional clusters and shall use the evaluation
23	metrics to assess the impact and effectiveness
24	of established regional innovation hot spots in
25	improving the regional economy and regional

1	job market. The Secretary shall also assess the
2	cost effectiveness of operating within each re-
3	gional hot spot. The Secretary shall report the
4	biannual assessments to Congress.
5	(e) REGIONAL INNOVATION HOT SPOTS.—In this
6	section, the term "regional innovation hot spots" means
7	regions that are defined by a high degree of innovation
8	and the availability of talent, investment, and infrastruc-
9	ture necessary to create and sustain such innovation.
10	TITLE III—NATIONAL SCIENCE
11	FOUNDATION
12	SEC. 301. AUTHORIZATION OF APPROPRIATIONS.
13	(a) In General.—There are authorized to be appro-
14	priated to the National Science Foundation—
15	(1) \$6,440,000,000 for fiscal year 2007;
16	(2) \$7,433,000,000 for fiscal year 2008;
17	(3) \$8,577,000,000 for fiscal year 2009;
18	(4) \$9,898,000,000 for fiscal year 2010; and
19	(5) \$11,422,000,000 for fiscal year 2011.
20	(b) Plan for Increased Research.—
21	(1) In general.—Not later than 180 days
22	after the date of the enactment of this Act, the Di-
23	rector of the National Science Foundation shall sub-
24	mit a comprehensive, multiyear plan that describes
25	how the funds authorized in subsection (a) would be

- used, if appropriated, to the Senate Committee on Commerce, Science, and Transportation, the Senate Committee on Health, Education, Labor, and Pensions and the House of Representatives Committee
- 6 (2) Plan requirements.—The Director 7 shall—

on Science.

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- (A) develop the plan with a focus on strengthening the Nation's lead in physical science and technology, increasing overall workforce skills in physical science, technology, engineering, and mathematics at all levels, and strengthening innovation by expanding the focus of competitiveness and innovation policy at the regional and local level; and
- (B) emphasize spending increased research funds appropriated pursuant to subsection (a) in areas of investment for Federal research and technology programs identified under section 101(c) of this Act.

21 SEC. 302. INNOVATION-BASED EXPERIENTIAL LEARNING.

22 (a) IN GENERAL.—The Director of the National 23 Science Foundation shall establish a grant program under 24 which grants are provided to local educational agencies to 25 enable the local educational agencies to implement innova-

- 1 tion-based experiential learning in a total of up to 500
- 2 secondary schools and up to 500 elementary or middle
- 3 schools in the United States.
- 4 (b) APPLICATIONS.—A local educational agency de-
- 5 siring a grant under this section shall submit an applica-
- 6 tion at such time, in such manner, and accompanied by
- 7 such information as the Director of the National Science
- 8 Foundation may require.
- 9 (c) Experiential Learning Defined.—In this
- 10 section, the term "experiential learning" means a teaching
- 11 model that—
- 12 (1) begins with a relevant, real-world problem;
- (2) requires a student to research and plan a
- solution to the problem, and experiment with that
- solution; and
- 16 (3) follows the experiment with analysis, reflec-
- tion, discussion, and a redesign of the solution.
- 18 SEC. 303. GRADUATE FELLOWSHIPS AND GRADUATE
- 19 TRAINEESHIPS.
- 20 (a) Graduate Research Fellowship Pro-
- 21 GRAM.—
- 22 (1) In General.—During the 5-year period be-
- 23 ginning on the date of the enactment of this Act, the
- 24 Director of the National Science Foundation shall
- expand the Graduate Research Fellowship Program

- of the Foundation so that an additional 1,250 fellowships are awarded to United States citizens under the Program during that period.
- 4 (2) EXTENSION OF FELLOWSHIP PERIOD.—The
 5 Director is authorized to award fellowships under
 6 the Graduate Research Fellowship Program for a
 7 period of up to 5 years.
- Within the amounts authorized to be appropriated by section 301, there are authorized to be appropriated \$34,000,000 for each of the fiscal years 2007 through 2011 to provide an additional 250 fellowships under the Graduate Research Fellowship Program during each such fiscal year.
- 15 (b) Integrative Graduate Education and Re-16 Search Traineeship Program.—
- 17 (1) In General.—During the 5-year period be18 ginning on the date of the enactment of this Act, the
 19 Director shall expand the Integrative Graduate Edu20 cation and Research Traineeship program of the
 21 Foundation so that an additional 1,250 United
 22 States citizens are awarded grants under the pro23 gram during that period.
- 24 (2) AUTHORIZATION OF APPROPRIATIONS.— 25 Within the amounts authorized to be appropriated

- by section 301, there are authorized to be appropriated \$57,000,000 for each of the fiscal years 2007 through 2011 to provide grants to an additional 250 individuals under the Integrative Graduate Education and Research Traineeship program
- 7 SEC. 304. PROFESSIONAL SCIENCE MASTERS DEGREE PRO-
- 8 GRAMS.

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9 (a) Clearinghouse.—

during each such fiscal year.

- (1) Development.—The Director of the National Science Foundation shall establish a clearing-house, in collaboration with 4-year institutions of higher education, including applicable graduate schools and academic departments, industries, and Federal agencies that employ science-trained personnel, to share program elements used in successful professional science masters degree programs.
 - (2) AVAILABILITY.—The Director shall make the clearinghouse of program elements developed under paragraph (1) available to institutions of higher education that are developing professional science masters degree programs.
- 23 (b) Pilot Programs.—
- 24 (1) Program authorized.—The Director 25 shall award grants for pilot programs to 4-year in-

- stitutions of higher education to facilitate the institutions' creation or improvement of professional science master's degree programs.
 - (2) APPLICATION.—A 4-year institution of higher education desiring a grant under this section shall submit an application at such time, in such manner, and accompanied by such information as the Director may require. The application shall include—
 - (A) a description of the professional science masters degree program that the institution of higher education will implement;
 - (B) the amount of funding from non-Federal sources, including from private industries, that the institution of higher education shall use to support the professional masters degree program; and
 - (C) an assurance that the institution of higher education shall encourage students in the professional science master's degree program to apply for all forms of Federal assistance available to such students, including applicable graduate fellowships and student financial assistance under title IV of the Higher Education Act of 1965 (20 U.S.C. 1070 et seq.).

- 1 (3) Preference for alternative funding 2 SOURCES.—The Director shall give preference in 3 making awards to 4-year institutions of higher edu-4 cation seeking Federal funding to support pilot pro-5 fessional science master's degree programs, to those 6 applicants that secure more than $\frac{2}{3}$ of the funding 7 for such professional science masters degree programs from sources other than the Federal Govern-8 9 ment. 10 (4) Number of Grants; time period of 11
 - GRANTS.—
 - (A) NUMBER OF GRANTS.—Subject to the availability of appropriated funds, the Director shall award grants under paragraph (1) to a maximum of 200 4-year institutions of higher education.
 - (B) Time period of grants.—Grants awarded under this section shall be for one 3year term. Grants may be renewed only once for a maximum of 2 additional years.

(5) EVALUATION AND REPORTS.—

(A) DEVELOPMENT OF PERFORMANCE BENCHMARKS.—Prior to the start of the grant program, the National Science Foundation, in collaboration with 4-year institutions of higher

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1	education, shall develop performance bench-
2	marks to evaluate the pilot programs assisted
3	by grants under this section.
4	(B) EVALUATION.—For each year of the
5	grant period, the Director, in consultation with
6	4-year institutions of higher education, and
7	Federal agencies that employ science-trained
8	personnel, shall complete an evaluation of each
9	pilot program assisted by grants under this sec-
10	tion. Any pilot program that fails to satisfy the
11	performance benchmarks developed under sub-
12	paragraph (A) shall not be eligible for further
13	funding.
14	(C) Report.—Not later than 180 days
15	after the completion of an evaluation described
16	in subparagraph (A), the Director, in consulta-
17	tion with industries and Federal agencies that
18	employ science-trained personnel, shall submit a
19	report to Congress that includes—
20	(i) the results of the evaluation de-
21	scribed in subparagraph (A); and
22	(ii) recommendations for administra-

tive and legislative action that could opti-

mize the effectiveness of the pilot pro-

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1	grams, as the Director determines to be
2	appropriate.
3	(c) Institution of Higher Education De-
4	FINED.—In this section, the term "institution of higher
5	education" has the meaning given that term in section
6	101(a) of the Higher Education Act of 1965.
7	(d) Authorization of Appropriations.—Within
8	the amounts authorized by be appropriate by section 301,
9	there are authorized to be appropriated to carry out this
10	section $\$20,000,000$ for fiscal year 2007 and such sums
11	as may be necessary for each succeeding fiscal year.
12	SEC. 305. INCREASED SUPPORT FOR SCIENCE EDUCATION
13	THROUGH THE NATIONAL SCIENCE FOUNDA-
13 14	THROUGH THE NATIONAL SCIENCE FOUNDATION.
14	TION.
14 15	TION. Within the amounts authorized to be appropriated by
14 15 16 17	TION. Within the amounts authorized to be appropriated by section 301, there are authorized to be appropriated to
14 15 16 17	TION. Within the amounts authorized to be appropriated by section 301, there are authorized to be appropriated to carry out the physical science, mathematics, engineering,
14 15 16 17	TION. Within the amounts authorized to be appropriated by section 301, there are authorized to be appropriated to carry out the physical science, mathematics, engineering, and technology talent expansion program under section
114 115 116 117 118	Within the amounts authorized to be appropriated by section 301, there are authorized to be appropriated to carry out the physical science, mathematics, engineering, and technology talent expansion program under section 8(7) of the National Science Foundation Authorization
14 15 16 17 18 19 20	Within the amounts authorized to be appropriated by section 301, there are authorized to be appropriated to carry out the physical science, mathematics, engineering, and technology talent expansion program under section 8(7) of the National Science Foundation Authorization Act of 2002 (Public Law 107–368, 116 Stat. 3042)—
14 15 16 17 18 19 20 21	Within the amounts authorized to be appropriated by section 301, there are authorized to be appropriated to carry out the physical science, mathematics, engineering, and technology talent expansion program under section 8(7) of the National Science Foundation Authorization Act of 2002 (Public Law 107–368, 116 Stat. 3042)— (1) \$35,000,000 for fiscal year 2007;

SEC. 306. STUDY OF SERVICE SCIENCE.

2 (a	.)	SENSE	$_{ m OF}$	Congress.—	-It	is	the	sense	of	Con-
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- 3 gress that, in order to strengthen the competitiveness of
- 4 United States enterprises and institutions and to prepare
- 5 the people of the United States for high-wage, high-skill
- 6 employment, the Federal Government should better under-
- 7 stand and respond strategically to the emerging vocation
- 8 and learning discipline known as service science.
- 9 (b) STUDY.—Not later than 270 days after the date
- 10 of the enactment of this Act, the Director of the National
- 11 Science Foundation, through the National Academy of
- 12 Sciences, shall conduct a study and report to Congress re-
- 13 garding how the Federal Government should support,
- 14 through research, education, and training, the new dis-
- 15 cipline of service science.
- (c) Outside Resources.—In conducting the study
- 17 under subsection (b), the Director of the National Science
- 18 Foundation shall consult with leaders from 2- and 4-year
- 19 institutions of higher education, as defined in section 101
- 20 of the Higher Education Act of 1965 (20 U.S.C. 1001),
- 21 leaders from corporations, and other relevant parties.
- 22 (d) Service Science Defined.—In this section:
- 23 (1) In General.—The term "service science"
- 24 means curricula, research programs, and training
- regimens, including service sciences, management,
- and engineering programs, to teach individuals to

- apply technology, organizational process management, and industry-specific knowledge to solve complex problems.
- 4 (2) SERVICE SCIENCES, MANAGEMENT, AND EN-5 GINEERING PROGRAMS.—The term "service sciences, 6 management, and engineering programs" means the 7 discipline known as service sciences, management, 8 and engineering that—
 - (A) applies scientific, engineering, and management disciplines to tasks that one organization performs beneficially for others, generally as part of the services sector of the economy; and
 - (B) integrates computer science, operations research, industrial engineering, business strategy, management sciences, and social and legal sciences, in order to encourage innovation in how organizations create value for customers and shareholders that could not be achieved through such disciplines working in isolation.

21 SEC. 307. MEETING CRITICAL NATIONAL SCIENCE NEEDS.

22 (a) IN GENERAL.—In addition to assessing the de-23 gree to which research award and grant proposals sub-24 mitted to the Foundation, and research activities initiated 25 by the Foundation, sustain and strengthen the nation's

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- 1 traditional commitment to long-term basic research that
- 2 have the potential to be transformational to maintain the
- 3 flow of new ideas that fuel the economy, provide security,
- 4 and enhance the quality of life, to developing and sus-
- 5 taining a world class scientific workforce, and to fostering
- 6 the scientific literacy of its citizens, the Director of the
- 7 National Science Foundation shall include consideration
- 8 of the degree to which such awards and such research ac-
- 9 tivities may assist in meeting critical national needs in the
- 10 physical sciences, technology, engineering, and mathe-
- 11 matics.
- 12 (b) Priority Treatment.—Proposed research ac-
- 13 tivities, and grants funded under the Foundation's Re-
- 14 search and Related Activities Account, which can be ex-
- 15 pected to make contributions in physical and natural
- 16 sciences, technology, engineering, and mathematics, and
- 17 other research that underpins these areas, shall be given
- 18 priority in the selection of awards and in the allocation
- 19 of Foundation resources.
- 20 (c) Application of Priority Treatment to
- 21 Other Programs.—This requirement shall be applied to
- 22 other fellowship, grant or award programs authorized in
- 23 this title.

1	SEC. 308. EXPERIMENTAL PROGRAM TO STIMULATE COM-			
2	PETITIVE RESEARCH.			
3	Within the amounts authorized to be appropriated by			
4	section 301, there are authorized to be appropriated to			
5	the National Science Foundation for the Experimental			
6	Program to Stimulate Competitive Research authorized			
7	under section 113 of the National Science Foundation Au			
8	thorization Act of 1988 (42 U.S.C. 1862g)—			
9	(1) \$125,000,000 for fiscal year 2007; and			
10	(2) for each of fiscal years 2008 through 2011,			
11	an amount equal to $$125,000,000$ increased for each			
12	such year by an amount equal to the percentage in-			
13	crease of the National Science Foundation's budget			
14	request above the total amount appropriated to the			
15	Foundation for fiscal year 2007.			
16	TITLE IV—NATIONAL AERO-			
17	NAUTICS AND SPACE ADMIN-			
18	ISTRATION			
19	SEC. 401. NASA'S CONTRIBUTION TO INNOVATION.			
20	(a) Sense of the Congress.—It is the sense of the			
21	Congress that—			
22	(1) since its establishment the National Aero-			
23	nautics and Space Administration has played an im-			
24	portant role in stimulating excellence in the advance-			
25	ment of physical science and engineering disciplines			
26	and in providing opportunities and incentives for the			

- pursuit of academine studies in science, technology,
 engineering, and mathematics;
- 3 (2) a balanced science program as authorized 4 by section 101(d) of the National Aeronautics and 5 Space Administration Act 2005 (Public Law 109– 6 155) contributes significantly to innovation in and 7 the economic competitiveness of the United States; 8 and
- 9 (3) a robust National Aeronautics and Space Administration, funded at the levels authorized 10 11 under sections 202 and 203 of that Act would offer 12 a fair balance among science, aeronautics, explo-13 ration, and human space flight programs, all of 14 which can attract and employ scientists, engineers, 15 and technicians across a broad range of fields in 16 science, technology, mathematics, and engineering.
- 17 (b) Participation in Innovation and Competi18 Tiveness Programs.—The Administrator shall fully par19 ticipate in any interagency efforts to promote innovation
 20 and economic competitiveness through scientific research
 21 and development.

22 SEC. 402. AERONAUTICS INSTITUTE FOR RESEARCH.

(a) ESTABLISHMENT.—The Administrator of the Na tional Aeronautics and Space Administration shall establish within the Administration an Aeronautics Institute for

- 1 Research to manage the Aeronautics research of the Ad-
- 2 ministration. The Institute shall be headed by a director
- 3 with appropriate experience in aeronautics research and
- 4 development.
- 5 (b) Duties.—The Institute shall implement the pro-
- 6 grams authorized under Title IV of the National Aero-
- 7 nautics and Space Administration Authorization Act of
- 8 2005 (Public Law 109–155).
- 9 (c) Cooperation With Other Agencies.—The
- 10 Institute shall operate in conjunction with relevant pro-
- 11 grams in the Department of Transportation, the Depart-
- 12 ment of Defense, the Department of Commerce, and the
- 13 Department of Homeland Security, including the activities
- 14 of the Joint Planning and Development Office established
- 15 under the VISION 100—Century of Aviation Reauthor-
- 16 ization Act (Public Law 108-176). The Director of the
- 17 Institute may accept assistance, staff, and funding from
- 18 those Departments and other Federal agencies. Such
- 19 funding shall be in addition to funds authorized for aero-
- 20 nautics under the National Aeronautics and Space Admin-
- 21 istration Authorization Act of 2005 (Public Law 109-
- 22 155). The Director of the Institute may utilize the Next
- 23 Generation Air Transportation Senior Policy Committee
- 24 established under section 710 of under the VISION 100—
- 25 Century of Aviation Reauthorization Act (Public Law

- 1 108–176) to coordinate its programs with other Depart-
- 2 ments and agencies.
- 3 (d) Partnerships.—In developing and carrying out
- 4 its plans, the Institute shall consult with the public and
- 5 ensure the participation of experts from the private sector
- 6 including representatives of commercial aviation, general
- 7 aviation, aviation labor groups, aviation research and de-
- 8 velopment entities, aircraft and air traffic control sup-
- 9 pliers, and the space industry.

10 SEC. 403. BASIC RESEARCH ENHANCEMENT.

- 11 (a) In General.—The Administrator of the Na-
- 12 tional Aeronautics and Space Administration, the Director
- 13 of the National Science Foundation, the Secretary of En-
- 14 ergy, the Secretary of Defense, and Secretary of Com-
- 15 merce shall, to the extent practicable, coordinate basic and
- 16 fundamental research activities related to physical
- 17 sciences, technology, engineering and mathematics.
- 18 (b) Establishment of Basic Research Execu-
- 19 TIVE COUNCIL.—In order to ensure effective application
- 20 of resources to basic science activity and to facilitate coop-
- 21 erative basic and fundamental research activities with
- 22 other governmental organizations, the Administrator of
- 23 the National Aeronautics and Space Administration shall
- 24 establish within the Administration a Basic Research Ex-
- 25 ecutive Council to oversee the distribution and manage-

- 1 ment of programs and resources engaged in support of
- 2 basic research activity.
- 3 (c) Membership.—The membership of the Basic Re-
- 4 search Executive Council shall consist of the most senior
- 5 agency official representing each of the following areas of
- 6 research:
- 7 (1) Space Science.
- 8 (2) Earth Science.
- 9 (3) Life and Microgravity Sciences.
- 10 (4) Aeronautical Research.
- 11 (d) Leadership.—The Council shall be chaired by
- 12 an individual appointed for that purpose who shall have,
- 13 as a minimum, a appropriate graduate degree in a rec-
- 14 ognizable discipline in the physical sciences, and appro-
- 15 priate experience in the conduct and management of basic
- 16 research activity. The Chairman of the Council shall re-
- 17 port directly to the Administrator of the National Aero-
- 18 nautics and Space Administration.
- 19 (e) Supporting Resources and Personnel.—
- 20 The Chairman of the Council shall be provided with ade-
- 21 quate administrative staff support to conduct the activity
- 22 and functions of the Council.
- 23 (f) Duties.—The Basic Research Executive Council
- 24 shall have, at minimum, the following duties:

- 1 (1) To establish criteria for the identification of 2 research activity as basic in nature.
 - (2) To establish, in consultation with the Office of Science and Technology Policy, the National Science Foundation, the National Academy of Sciences, the National Institutes of Health, and other appropriate external organizations, a prioritization of fundamental research activity to be conducted by the National Aeronautics and Space Administration, to be reviewed and updated on an annual basis, taking into consideration evolving national research priorities.
 - (3) To monitor, review, and evaluate all basic research activity of the National Aeronautics and Space Administration for compliance with basic research priorities established under paragraph (2).
 - (4) To make recommendations to the Administrator regarding adjustments in the basic research activities of the Administration to ensure consistency with the research priorities established under this section.
 - (5) To provide an annual report to the Senate Committee on Commerce, Science, and Transportation and the House of Representatives Committee on Science outlining the activities of the Council

1	during the preceding year and the status of basic re-
2	search activity within the Administration. The initial
3	such report, to serve as a baseline document, shall
4	be provided within 90 days after the establishment
5	and initial operations of the Council.
6	TITLE V-NATIONAL INSTITUTE
7	OF STANDARDS AND TECH-
8	NOLOGY
9	SEC. 501. AUTHORIZATION OF APPROPRIATIONS.
10	There are authorized to be appropriated to the Sec-
11	retary of Commerce for the use of the National Institute
12	of Standards and Technology—
13	(1) for fiscal year 2007, \$639,646,000, or
14	which \$106,000,000 shall be used for the Hollings
15	Manufacturing Extension Partnership Program;
16	(2) for fiscal year 2008, \$703,611,000, of
17	which \$106,000,000 shall be used for the Hollings
18	Manufacturing Extension Partnership Program;
19	(3) for fiscal year 2009, \$773,972,000, of
20	which \$106,000,000 shall be used for the Hollings
21	Manufacturing Extension Partnership Program;
22	(4) for fiscal year 2010, \$851,369,000, or
23	which \$106,000,000 shall be used for the Hollings
24	Manufacturing Extension Partnership Programs and

1	(5) for fiscal year 2011, \$936,506,000, of
2	which \$106,000,000 shall be used for the Hollings
3	Manufacturing Extension Partnership Program.
4	SEC. 502. AMENDMENTS TO THE STEVENSON-WYDLER
5	TECHNOLOGY INNOVATION ACT OF 1980.
6	(a) In General.—Section 5 of the Stevenson-
7	Wydler Technology Innovation Act of 1980 (15 U.S.C
8	3704) is repealed.
9	(b) Conforming Amendments.—
10	(1) Section 5314 of title 5, United States Code
11	is amended by striking "Under Secretary of Com-
12	merce for Technology".
13	(2) Section 4 of the Stevenson-Wydler Tech-
14	nology Innovation Act of 1980 (15 U.S.C. 3703) is
15	amended—
16	(A) by striking paragraphs (1) and (3)
17	and
18	(B) by redesignating paragraphs (2)
19	through (13) as paragraphs (1) through (11)
20	respectively.
21	(3) Section 21(a) of the Stevenson-Wydler
22	Technology Innovation Act of 1980 (15 U.S.C
23	3713(a)) is amended—

1	(A) by striking out "sections 5, 11(g), and
2	16" in paragraph (1) and inserting "sections
3	11(g) and 16";
4	(B) by striking "\$500,000 is authorized
5	only for the purpose of carrying out the require-
6	ments of the Japanese technical literature pro-
7	gram established under section 5(d) of this
8	Act;".
9	(4) Section 208 of the High-Performance Com-
10	puting Act of 1991 (15 U.S.C. 5528 is amended by
11	striking subsection (c) and redesignating subsection
12	(d) as subsection (e).
13	(5) Section 6(b)(4)(B)(v) of the Assistive Tech-
14	nology Act of 1998 (29 U.S.C. $3005(b)(4)(B)(v)$) is
15	amended by striking "the Technology Administra-
16	tion of the Department of Commerce," and inserting
17	"the National Institute of Standards and Tech-
18	nology,".
19	SEC. 503. INNOVATION ACCELERATION.
20	(a) Grant Program.—In order to implement sec-
21	tion 202 of this Act, the Director of the National Institute
22	of Standards and Technology shall—
23	(1) establish a program linked to the measure-
24	ment laboratories, to be known as the "Standards
25	and Technology Acceleration Research Program", to

- 1 support and promote innovation in the United States
- 2 through high-risk, high-reward research; and
- 3 (2) set aside not less than 8 percent of the
- 4 funds available to the Institute each fiscal year for
- 5 the program.
- 6 (b) External Funding.—The Director shall ensure
- 7 that at least 80 percent of the funds available for the pro-
- 8 gram shall be used to award competitive, merit-reviewed
- 9 grants, cooperative agreements or contracts to public or
- 10 private entities, including businesses and universities. In
- 11 selecting these projects, the Director shall ensure that all
- 12 projects have scientific and technical merit and that any
- 13 resulting intellectual property shall vest in a company or
- 14 companies incorporated in the United States. Each exter-
- 15 nal project shall involve at least one small or medium-sized
- 16 business and the Director shall give priority to joint ven-
- 17 tures between small or medium-sized businesses and edu-
- 18 cational institutions. Any grant shall be for a period not
- 19 to exceed 3 years.
- 20 (c) Competitions.—The Director shall solicit pro-
- 21 posals annually to address areas of national need for high-
- 22 risk, high-reward research, as identified by the Director.
- 23 (d) Annual Report.—Each year the Director shall
- 24 issue an annual report describing the program's activities,
- 25 including include a description of the metrics upon which

- 1 grant funding decisions were made in the previous fiscal
- 2 year, any proposed changes to those metrics, metrics for
- 3 evaluating the success of ongoing and completed grants,
- 4 and an evaluation of ongoing and completed grants. The
- 5 first annual report shall include best practices for manage-
- 6 ment of programs to stimulate high-risk, high-reward re-
- 7 search.
- 8 (e) Administrative Expenses.—No more than 5
- 9 percent of the finding available to the program may be
- 10 used for administrative expenses.
- 11 (f) High-Risk, High-Reward Research De-
- 12 FINED.—In this section, the term "high-risk, high-reward
- 13 research" means research that—
- 14 (1) has the potential for yielding results with
- far-ranging or wide-ranging implications; and
- 16 (2) addresses critical national needs related to
- measurement standards and technology; but
- 18 (3) is too novel or spans too diverse a range of
- disciplines to fare well in the traditional peer review
- process.
- 21 SEC. 504. DEVELOPMENT OF ADVANCED MANUFACTURING
- 22 **SYSTEMS.**
- 23 (a) Research and Development.—The Director
- 24 of the National Institute of Standards and Technology
- 25 shall support research and development in collaboration

1	with entities and organizations from the industrial sector
2	to supplement and support work in the private sector on
3	advanced manufacturing systems designed to increase pro-
4	ductivity and efficiency and to create competitive advan-
5	tages for United States businesses. These research and de-
6	velopment activities should focus on the following activi-
7	ties:
8	(1) Supporting industry efforts to develop inno-
9	vative, state-of-the-art manufacturing processes, ad-
10	vanced technologies through interoperable standards,
11	and related concepts, including—
12	(A) advanced distributed and desktop man-
13	ufacturing linked to and made compatible with
14	the extended production enterprise system de-
15	scribed in paragraph (2);
16	(B) non-contact quality inspection proc-
17	esses linked to and made compatible with the
18	extended production enterprise system;
19	(C) small lot manufacturing processes that
20	are—
21	(i) as cost-effective as mass produc-
22	tion processes; and
23	(ii) linked to and compatible with the
24	extended production enterprise system; and

1	(D) the use of state-of-the-art materials
2	and processes at the nanotechnological level.
3	(2) Supporting industry efforts to develop an
4	extended production enterprise system that inte-
5	grates key entities, including entities engaged in
6	product design and development, manufacturing,
7	sourcing, distribution, and user entities, including
8	through the development of—
9	(A) interoperable software and standards
10	designed to maximize the compatibility of the
11	design, modeling, and manufacturing stages of
12	the manufacturing process; and
13	(B) supply chain software.
14	(b) Coordination of Activities.—The Director
15	shall coordinate activities under subsection (a) with activi-
16	ties under—
17	(1) the Small Business Innovation Research
18	Program (as defined in section 2500(11) of title 10,
19	United States Code);
20	(2) the Small Business Technology Transfer
21	Program (as defined in section 2500(12) of title 10,
22	United States Code); and
23	(3) the Manufacturing Technology Program es-
24	tablished under section 2521 of title 10, United
25	States Code.

- 1 (c) Testing.—The Director shall support the work
- 2 of entities and organizations from the industrial sector in
- 3 developing prototypes and testing areas for testing and re-
- 4 fining, in actual production conditions, the processes, tech-
- 5 nologies, and extended production enterprise system de-
- 6 scribed in subsection (a)(2) in order to maximize produc-
- 7 tivity gains and cost efficiencies.
- 8 (d) Development of Standards.—The Director,
- 9 in coordination with entities and organizations from the
- 10 industrial sector and the Manufacturing Technology Pro-
- 11 gram, shall support standards to be used as manufac-
- 12 turing performance criteria to accelerate the adoption of
- 13 improvements and innovative processes and protocols de-
- 14 veloped under subsection (a).
- (e) Pilot Test Beds of Excellence.—
- 16 (1) Establishment.—The Director shall, in
- 17 collaboration with entities and organizations from
- the industrial sector, support not more than 3 pilot
- testbeds of excellence in manufacturing fields impor-
- tant to advanced technologies developed under sub-
- section (a), such as nanotechnology or fuel cell tech-
- 22 nology, to be used by the public and private sector.
- The testbeds of excellence shall focus on production
- development, particularly the invention, prototyping,

- and engineering development stages of the manufacturing process.
 (2) Competition.—The Director shall conduct
 - (2) Competition.—The Director shall conduct a competition to select the pilot testbeds of excellence based on criteria and metrics established by the Secretary prior to the competition.
 - (3) Funding.—The Director may provide the pilot testbeds of excellence selected pursuant to the competition set forth in paragraph (2) with an appropriate level of funding if and only if the following conditions are satisfied:
 - (A) No more than ½ of the funding of each testbed of excellence is provided by the Federal Government.
 - (B) At least ½ of the cost of each testbed of excellence is provided by participants from the private sector.
 - (C) At least ½ of the cost of each testbed of excellence is provided by State or local governments.
 - (4) REVIEW OF FUNDED TESTBEDS.—Within 3 years of the start of Federal funding for any testbed of excellence pursuant to this section, the Director shall use the metrics established pursuant to paragraph (2) and any additional review metrics that the

- 1 Director determines appropriate to assess the per-
- 2 formance of the federally funded testbeds of excel-
- 3 lence. Any testbed of excellence that fails to satisfy
- 4 any of the performance metrics will be ineligible for
- 5 additional Federal funding.
- 6 (5) Sunset Provision.—Federal funding of
- 7 any testbed of excellence shall cease 5 years after
- 8 the date of enactment of this Act.
- 9 (f) Hollings Manufacturing Extension Part-
- 10 NERSHIP FOCUS ON INNOVATION.—The Director of the
- 11 National Institute of Standards and Technology shall en-
- 12 sure that the Hollings Manufacturing Extension Partner-
- 13 ship program develops a focus on innovation, including
- 14 through technology diffusion, supply and distribution
- 15 chain integration, and the dissemination of the processes,
- 16 technologies, and extended production enterprise systems
- 17 developed under this section.
- 18 (g) Extended Production Enterprise.—In this
- 19 section the term "extended production enterprise" means
- 20 a system in which key entities in the manufacturing chain,
- 21 including entities engaged in product design and develop-
- 22 ment, manufacturing, sourcing, distribution, and user en-
- 23 tities, are linked together through information technology
- 24 and other means to promote efficiency and productivity.

1	SEC. 505. COLLABORATIVE MANUFACTURING RESEARCH
2	PILOT GRANTS.
3	The National Institute of Standards and Technology
4	Act is amended—
5	(1) by redesignating the first section 32 (15
6	U.S.C. 271 note) as section 34 and moving it to the
7	end of the Act; and
8	(2) by inserting before the section moved by
9	paragraph (1) the following new section:
10	"SEC. 33. COLLABORATIVE MANUFACTURING RESEARCH
11	PILOT GRANTS.
12	"(a) AUTHORITY.—
13	"(1) Establishment.—The Director shall es-
14	tablish a pilot program of awards to partnerships
15	among participants described in paragraph (2) for
16	the purposes described in paragraph (3). Awards
17	shall be made on a peer-reviewed, competitive basis.
18	"(2) Participants.—Such partnerships shall
19	include at least—
20	"(A) 1 manufacturing industry partner;
21	and
22	"(B) 1 nonindustry partner.
23	"(3) Purpose.—The purpose of the program
24	under this section is to foster cost-shared collabora-
25	tions among firms, educational institutions, research
26	institutions. State agencies, and nonprofit organiza-

- 1 tions to encourage the development of innovative,
- 2 multidisciplinary manufacturing technologies. Part-
- 3 nerships receiving awards under this section shall
- 4 conduct applied research to develop new manufac-
- 5 turing processes, techniques, or materials that would
- 6 contribute to improved performance, productivity,
- 7 and competitiveness of United States manufacturing,
- 8 and build lasting alliances among collaborators.
- 9 "(b) Program Contribution.—Awards under this
- 10 section shall provide for not more than one-third of the
- 11 costs of a partnership.
- 12 "(c) Applications.—Applications for awards under
- 13 this section shall be submitted in such manner, at such
- 14 time, and containing such information as the Director
- 15 shall require. Such applications shall describe at a min-
- 16 imum—
- 17 "(1) how each partner will participate in devel-
- oping and carrying out the research agenda of the
- 19 partnership;
- 20 "(2) the research that the grant would fund;
- 21 and
- 22 "(3) how the research to be funded with the
- award would contribute to improved performance,
- 24 productivity, and competitiveness of the United
- 25 States manufacturing industry.

- 1 "(d) Selection Criteria.—In selecting applica-
- 2 tions for awards under this section, the Director shall con-
- 3 sider at a minimum—
- 4 "(1) the degree to which projects will have a
- 5 broad impact on manufacturing;
- 6 "(2) the novelty and scientific and technical
- 7 merit of the proposed projects; and
- 8 "(3) the demonstrated capabilities of the appli-
- 9 cants to successfully carry out the proposed re-
- search.
- 11 "(e) DISTRIBUTION.—In selecting applications under
- 12 this section the Director shall ensure, to the extent prac-
- 13 ticable, a distribution of overall awards among a variety
- 14 of manufacturing industry sectors and a range of firm
- 15 sizes.
- 16 "(f) DURATION.—In carrying out this section, the Di-
- 17 rector shall run a single pilot competition to solicit and
- 18 make awards. Each award shall be for a 3-year period.".
- 19 SEC. 506. MANUFACTURING EXTENSION.
- 20 (a) Manufacturing Center Evaluation.—Sec-
- 21 tion 25(c)(5) of the National Institute of Standards and
- 22 Technology Act (15 U.S.C. 278k(c)(5)) is amended by in-
- 23 serting "A Center that has not received a positive evalua-
- 24 tion by the evaluation panel shall be notified by the panel
- 25 of the deficiencies in its performance and shall be placed

- 1 on probation for one year, after which time the panel shall
- 2 reevaluate the Center. If the Center has not addressed the
- 3 deficiencies identified by the panel, or shown a significant
- 4 improvement in its performance, the Director shall con-
- 5 duct a new competition to select an operator for the Cen-
- 6 ter or may close the Center." after "at declining levels.".
- 7 (b) FEDERAL SHARE.—Strike section 25(d) of the
- 8 National Institute of Standards and Technology Act (15
- 9 U.S.C. 278k(d)) and insert the following:
- 10 "(d) Acceptance of Funds.—In addition to such
- 11 sums as may be appropriated to the Secretary and Direc-
- 12 tor to operate the Centers program, the Secretary and Di-
- 13 rector also may accept funds from other Federal depart-
- 14 ments and agencies and under section 2(c)(7) from the
- 15 private sector for the purpose of strengthening United
- 16 States manufacturing. Such funds from the private sector,
- 17 if allocated to a Center or Centers, shall not be considered
- 18 in the calculation of the Federal share of capital and an-
- 19 nual operating and maintenance costs under subsection
- 20 (c).".
- 21 (c) Hollings Manufacturing Extension Cen-
- 22 TER COMPETITIVE GRANT PROGRAM.—Section 25 of the
- 23 National Institute of Standards and Technology Act (15
- 24 U.S.C. 278k) is amended by adding at the end the fol-
- 25 lowing new subsections:

"(e) Competitive Grant Program.—

- "(1) ESTABLISHMENT.—The Director shall establish, within the Hollings Manufacturing Extension Partnership program under this section and section 26 of this Act, a program of competitive awards among participants described in paragraph (2) for the purposes described in paragraph (3).
 - "(2) Participants.—Participants receiving awards under this subsection shall be the Centers, or a consortium of such Centers.
 - "(3) Purpose.—The purpose of the program under this subsection is to develop projects to solve new or emerging manufacturing problems as determined by the Director, in consultation with the Director of the Hollings Manufacturing Extension Partnership program, the Hollings Manufacturing Extension Partnership National Advisory Board, and small and medium-sized manufacturers. One or more themes for the competition may be identified, which may vary from year to year, depending on the needs of manufacturers and the success of previous competitions. These themes shall be related to projects associated with manufacturing extension activities, including supply chain integration and qual-

1	ity management, or extend beyond these traditional
2	areas.
3	"(4) Applications.—Applications for awards
4	under this subsection shall be submitted in such
5	manner, at such time, and containing such informa-
6	tion as the Director shall require, in consultation
7	with the Hollings Manufacturing Extension Partner-
8	ship National Advisory Board.
9	"(5) Selection.—Awards under this sub-
10	section shall be peer reviewed and competitively
11	awarded. The Director shall select proposals to re-
12	ceive awards—
13	"(A) that utilize innovative or collaborative
14	approaches to solving the problem described in
15	the competition;
16	"(B) that will improve the competitiveness
17	of industries in the region in which the Center
18	or Centers are located; and
19	"(C) that will contribute to the long-term
20	economic stability of that region.
21	"(6) Program contribution.—Recipients of
22	awards under this subsection may be required to
23	provide a matching contribution.
24	"(f) Audits.—A center that receives assistance
25	under this section shall submit annual audits to the Sec-

- 1 retary in accordance with Office of Management and
- 2 Budget Circular A-133 and shall make such audits avail-
- 3 able to the public on request.".
- 4 (d) Programmatic and Operational Plan.—Not
- 5 later than 120 days after the date of enactment of this
- 6 Act, the Director of the National Institute of Standards
- 7 and Technology shall transmit to the Committee on
- 8 Science of the House of Representatives and the Com-
- 9 mittee on Commerce, Science, and Transportation of the
- 10 Senate a 3-year programmatic and operational plan for
- 11 the Hollings Manufacturing Extension Partnership pro-
- 12 gram under sections 25 and 26 of the National Institute
- 13 of Standards and Technology Act (15 U.S.C. 278k and
- 14 278l). The plan shall include comments on the plan from
- 15 the Hollings Manufacturing Extension Partnership State
- 16 partners and the Hollings Manufacturing Extension Part-
- 17 nership National Advisory Board.
- 18 SEC. 507. EXPERIMENTAL PROGRAM TO STIMULATE COM-
- 19 **PETITIVE TECHNOLOGY.**
- 20 (a) In General.—The Director of the National In-
- 21 stitutes of Standards and Technology shall re-establish the
- 22 Experimental Program to Stimulate Competitive Tech-
- 23 nology. The purpose of the program shall be to strengthen
- 24 the technological competitiveness of those States that have

1	historically received less Federal research and development
2	funds than a majority of the States have received.
3	(b) Arrangements.—In carrying out the program,
4	the Director shall cooperate with State, regional, or local
5	science and technology-based economic development orga-
6	nization and with representatives of small business firms
7	and other appropriate technology-based businesses.
8	(c) Grants and Cooperative Agreements.—In
9	carrying out the program, the Director may make grants
10	or enter into cooperative agreements to provide for—
11	(1) technology research and development;
12	(2) technology transfer from university re-
13	search;
14	(3) technology deployment and diffusion; and
15	(4) the strengthening of technological and inno-
16	vation capabilities through consortia comprised of—
17	(A) technology-based small business firms;
18	(B) industries and emerging companies;
19	(C) institutions of higher education includ-
20	ing community colleges; and
21	(D) State and local development agencies
22	and entities.
23	(d) Requirements for Making Awards.—
24	(1) In General.—In making awards under
25	this section, the Director shall ensure that the

awards are awarded on a competitive basis that includes a review of the merits of the activities that are the subject of the award, giving special emphasis to those projects which will increase the participation of women and underrepresented groups in

science and technology.

- 7 (2) MATCHING REQUIREMENT.—The non-Fed-8 eral share of the activities (other than planning ac-9 tivities) carried out under an award under this sub-10 section shall be not less than 50 percent of the cost 11 of those activities.
- 12 (e) Criteria for States.—The Director shall es-13 tablish criteria for achievement by each State that partici-14 pates in the program. Upon the achievement of all such 15 criteria, a State shall cease to be eligible to participate 16 in the program.
- 17 (f) COORDINATION.—To the extent practicable, in 18 carrying out this subsection, the Director shall coordinate 19 the program with other programs of the Department of 20 Commerce.
- 21 (g) Report.—

6

22 (1) IN GENERAL.—Not later than 90 days after 23 the enactment of this act, the Director shall prepare 24 and submit a report that meets the requirements of 25 this paragraph to the Senate Committee on Com-

1	merce, Science, and Transportation and the House
2	of Representatives Committee on Science.
3	(2) REQUIREMENTS FOR REPORT.—The report
4	prepared under this paragraph shall contain—
5	(A) a description of the structure and pro-
6	cedures of the program;
7	(B) a management plan for the program;
8	(C) a description of the merit-based review
9	process to be used in the program;
10	(D) milestones for the evaluation of activi-
11	ties to be assisted under the program in fiscal
12	year 2008;
13	(E) an assessment of the eligibility of each
14	State that participates in the Experimental
15	Program to Stimulate Competitive Research of
16	the National Science Foundation to participate
17	in the program under this subsection; and
18	(F) the evaluation criteria with respect to
19	which the overall management and effectiveness
20	of the program will be evaluated.
21	SEC. 508. TECHNICAL AMENDMENTS TO THE NATIONAL IN-
22	STITUTE OF STANDARDS AND TECHNOLOGY
23	ACT AND OTHER TECHNICAL AMENDMENTS.
24	(a) Research Fellowships.—Section 18 of the
25	National Institute of Standards and Technology Act (15

1	U.S.C. 278g-1) is amended by striking "up to 1 per cen-
2	tum of the" in the first sentence.
3	(b) Financial Agreements.—
4	(1) Clarification.—Section 2(b)(4) of the
5	National Institute of Standards and Technology Act
6	(15 U.S.C. 272(b)(4)) is amended by inserting "and
7	grants and cooperative agreements," after "arrange-
8	ments,".
9	(2) Memberships.—Section 2(c) of the Na-
10	tional Institute of Standards and Technology Act
11	(15 U.S.C. 272(c)) is amended—
12	(A) by striking "and" after the semicolon
13	in paragraph (21);
14	(B) by redesignating paragraph (22) as
15	paragraph (23); and
16	(C) by inserting after paragraph (21) the
17	following:
18	"(22) notwithstanding subsection (b)(4) of this
19	section, the Grants and Cooperative Agreements Act
20	(31 U.S.C. 6301–6308), the Competition in Con-
21	tracting Act (31 U.S.C. 3551 -3556), and the Fed-
22	eral Acquisition Regulations set forth in title 48,
23	Code of Federal Regulations, to expend appropriated
24	funds for National Institute of Standards and Tech-
25	nology memberships in scientific organizations, reg-

- 1 istration fees for attendance at conferences, and
- 2 sponsorship of conferences in furtherance of tech-
- 3 nology transfer; and".
- 4 (c) Working Capital Fund.—Section 12 of the
- 5 National Institute of Standards and Development Act (15
- 6 U.S.C. 278b) is amended by adding at the end the fol-
- 7 lowing:
- 8 "(g) Amount and Source of Transfers.—Not to
- 9 exceed one-quarter per centum of the amounts appro-
- 10 priated to the Institute for any fiscal year may be trans-
- 11 ferred to the fund, in addition to any other transfer au-
- 12 thority. In addition, funds provided to the Institute from
- 13 other Federal agencies for the purpose of production of
- 14 Standard Reference Materials may be transferred to the
- 15 fund.".
- 16 (d) Outdated Specifications.—
- 17 (1) Redefinition of metric system.—The
- 18 Metric System Act of 1866 (15 U.S.C. 205; 14 Stat.
- 19 339, 340) is amended by striking the text of section
- 20 2 and inserting the following:
- 21 "The metric system of measurement shall be defined
- 22 as the International System of Units as established in
- 23 1960, and subsequently maintained, by the General Con-
- 24 ference of Weights and Measures, and as interpreted or

- 1 modified for the United States by the Secretary of Com-2 merce.".
- 3 (2) Repeal of redundant and obsolete
 4 Authority.—The Act of July 21, 1950, entitled,
 5 "An Act To redefine the units and establish the
 6 standards of electrical and photometric measure7 ments of 1950" (15 U.S.C. 223, 224) is hereby repealed.
 - (3) STANDARD TIME.—The first section of the Act of March 19, 1918, (15 U.S.C 261; commonly known as the Calder Act) is amended—
 - (A) by inserting "(a) IN GENERAL.—" before "For the purpose";
 - (B) by striking the second sentence and the extra period after it and inserting "Except as provided in section 3(a) of the Uniform Time Act of 1966, the standard time of the first zone shall be Coordinated Universal Time retarded by 4 hours; that of the second zone retarded by 5 hours; that of the third zone retarded by 6 hours; that of the fourth zone retarded by 7 hours; that of the fifth zone retarded 8 hours; that of the sixth zone retarded by 9 hours; that of the seventh zone retarded by 10 hours; that of the eighth zone retarded by 11 hours; and

1	that of the ninth zone shall be Coordinated
2	Universal Time advanced by 10 hours."; and
3	(C) adding at the end the following:
4	"(b) Coordinated Universal Time Defined.—In
5	this section, the term 'Coordinated Universal Time' means
6	the time scale maintained through the General Conference
7	of Weights and Measures and interpreted or modified for
8	the United States by the Secretary of Commerce.'.
9	(e) RETENTION OF DEPRECIATION SURCHARGE.—
10	Section 14 of the National Institute of Standards and
11	Technology Act (15 U.S.C. 278d) is amended—
12	(1) by inserting "(a) In General.—" before
13	"Within"; and
14	(2) adding at the end the following:
15	"(b) Retention of Fees.—The Director is author-
16	ized to retain all building use and depreciation surcharge
17	fees collected pursuant to OMB Circular A–25. Such fees
18	shall be collected and credited to the Construction of Re-
19	search Facilities Appropriation Account for use in mainte-
20	nance and repair of National Institute of Standards and
21	Technology's existing facilities.".
22	(f) Non-Energy Inventions Program.—Section
23	28 of the National Institute of Standards and Technology

- 1 Act, as redesignated by section 202 of this Act (formerly
- $2\,$ 15 U.S.C. 278m), is repealed.

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